

Patent Claims

1. An endoscopic visualization apparatus, comprising:
 - a housing;
 - a first imaging system covering a first image field, said first imaging system being arranged in said housing;
 - a second imaging system covering a second image field, said second imaging system being arranged in said housing,

wherein said first imaging system and said second imaging system are significantly different with regard to at least one optical parameter, and wherein said first image field and said at least one second image field overlap one another only partially.
2. The visualization apparatus of claim 1, wherein said first imaging system differs from said at least one second imaging system with regard to a direction of view.
3. The visualization apparatus of claim 1, wherein said first imaging system differs from said at least one second imaging system with regard to an aperture angle.
4. The visualization apparatus of claim 1, said first imaging system has a first objective and said at least one second imaging system has a second objective, and wherein said

first objective differs significantly from said second objective with regard to said at least one optical parameter.

5. The visualization apparatus of claim 4, wherein said first objective is assigned a first electronic imager and said second objective is assigned a second electronic imager.
6. The visualization apparatus of claim 5, wherein for said second imager only one additional signal line for video image transmission leads from distal to proximal, while the signals for reading out and for the voltage supply of the imagers are used jointly for all imagers.
7. The visualization apparatus of claim 1, wherein said first objective is assigned a first electronic imager and said second objective is assigned a second electronic imager, and wherein at least one of said first and second imagers can be rotated about an axis transverse to an image recording surface.
8. The visualization apparatus of claim 1, wherein said imaging systems are assigned at least one illuminating system which radiates light such that each of said image fields is illuminated.
9. The visualization apparatus of claim 1, further comprising a positioning device for automatically tracking said visualization apparatus as a function of a position of an operating instrument, said positioning device acting such

that said operating instrument always appears in one of said image fields.

10. The visualization apparatus of claim 1, wherein said apparatus is designed in the form of an endoscope, said at least two imaging systems being arranged in a distal end of a shaft of said endoscope.

11. The visualization apparatus of claim 1, wherein said apparatus is designed in the form of a video camera unit which has at least two of said imaging systems and which is fastened on a guide shaft for guiding an operating instrument.

12. An endoscopic visualization apparatus, comprising:

- a housing;
- a first imaging system covering a first image field, said first imaging system being arranged in said housing and having a first electronic imager;
- at least a second imaging system covering a second image field, said second imaging system being arranged in said housing and having a second electronic imager,

wherein a signal line for reading out and for the voltage supply of said imagers are jointly used by said first imager and said at least second imager.

13. The endoscopic visualization apparatus of claim 12, wherein said first imaging system and said second imaging system are significantly different with regard to at least one optical parameter, and wherein said first image field and said at least one second image field overlap one another only partially.
14. The visualization apparatus of claim 12, wherein said first imaging system differs from said at least one second imaging system with regard to a direction of view.
15. The visualization apparatus of claim 12, wherein said first imaging system has a first objective and said at least one second imaging system has a second objective, and wherein said first objective differs significantly from said second objective with regard to at least one optical parameter.
16. The visualization apparatus of claim 15, wherein said first objective is assigned said first electronic imager and said second objective is assigned said second electronic imager.
17. The visualization apparatus of claim 12, wherein at least one of said first and second imagers can be rotated about an axis transverse to an image recording surface of said imager.
18. The visualization apparatus of claim 12, wherein said imaging systems are assigned at least one illuminating

system which radiates light such that each of said image fields is illuminated.

19. The visualization apparatus of claim 12, further comprising a positioning device for automatically tracking said visualization apparatus as a function of a position of an operating instrument, said positioning device being such that said operating instrument always appears in one of said image fields.
20. The visualization apparatus of claim 12, wherein said apparatus is designed in the form of an endoscope, said at least two imaging systems being arranged in a distal end of a shaft of said endoscope.
21. The visualization apparatus of claim 12, wherein said apparatus is designed in the form of a video camera unit which has at least two imaging systems and which is fastened on a guide shaft for guiding an operating instrument.
22. An endoscopic visualization apparatus, comprising:
 - a housing;
 - a first imaging system covering a first image field, said first imaging system being arranged in said housing and having a first electronic imager;

- at least a second imaging system covering a second image field, said second imaging system being arranged in said housing and having a second electronic imager,

wherein said first imaging system and said second imaging system are significantly different with regard to at least one optical parameter, and wherein said first image field and said at least one second image field overlap one another only partially, and

wherein a signal line for reading out and for the voltage supply of said imagers are jointly used by said first imager and said at least second imager, and wherein said first imager is provided with first connecting pads and said second imager is provided with second connecting pads, and wherein said first and second connecting pads are connected in a mirror-image fashion relative to one another and direct mutual contact is made between the first and second connecting pads.

23. The visualization apparatus of claim 22, wherein said first imaging system differs from said at least one second imaging system with regard to a direction of view.
24. The visualization apparatus of claim 22, wherein said first imaging system has a first objective and said at least one second imaging system has a second objective, and wherein said first objective differs significantly

from said second objective with regard to at least one optical parameter.

25. The visualization apparatus of claim 24, wherein said first objective is assigned said first electronic imager and second objective is assigned said second electronic imager.
26. The visualization apparatus of claim 22, wherein at least one of said first and second imagers can be rotated about an axis transverse to an image recording surface of said imager.
27. The visualization apparatus of claim 22, wherein said imaging systems are assigned at least one illuminating system which radiates light such that each of said image fields is illuminated.
28. The visualization apparatus of claim 22, further comprising a positioning device for automatically tracking said visualization apparatus as a function of a position of an operating instrument, said positioning device being such that said operating instrument always appears in one of said image fields.
29. The visualization apparatus of claim 22, wherein said apparatus is designed in the form of an endoscope, said at least two imaging systems being arranged in a distal end of a shaft of said endoscope.

30. The visualization apparatus of claim 22, wherein said apparatus is designed in the form of a video camera unit which has at least two imaging systems and which is fastened on a guide shaft for guiding an operating instrument.